INVENTIONS & INNOVATION

Success Story

AUXILIARY AIR-CONDITIONING, HEATING, AND ENGINE-WARMING SYSTEM FOR TRUCKS

Pony Pack System Reduces Energy Use, Pollution, and Fuel Costs

Benefits

- Reduces fuel use and engine wear by avoiding engine idling
- Prolongs truck engine life and cuts maintenance costs
- Has saved 17 trillion Btu of diesel fuel and avoided $86 million in diesel fuel purchases through 2000
- Eliminates 70% to 90% of diesel emissions during long periods of engine idling
- Has avoided 1.4 million tons of CO_2 emissions through 2000
- Could save 58 trillion Btu nationwide through 2010

Applications

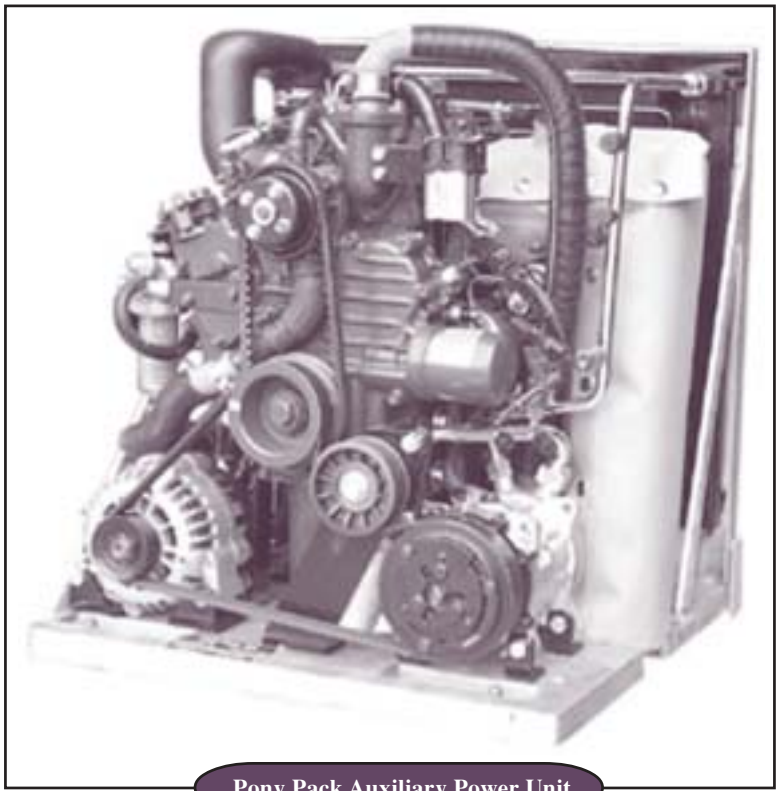
An auxiliary power unit for maintaining cab power in heavy trucks.

"We care most about the main engine life. Every new vehicle put into long-haul service is equipped with Pony Pack."

– Pete Ballard
Maintenance Director
Ozinga Transportation

Almost two million Class 8 heavy trucks deliver essential goods throughout the United States each year. Nearly 500,000 of these heavy trucks travel more than 200 miles per day, and more than 300,000 of them idle their engines an average of almost 1900 hours per year. Idling provides the power needed to operate truck equipment such as lift gates, cranes, and car carrier ramps or to maintain power for lights, appliances, communication gear, and air conditioning or heating for the cab and sleeping area when drivers are resting.

While an idling engine maintains a comfortable environment for drivers, it wastes energy. Constant running of high horsepower engines at low rpm combusts fuel incompletely. Besides wasting fuel during downtimes, the poor combustion gives off exhaust emissions when the truck is not on the road. In addition, continually operating the engine at low speed causes twice the wear on internal parts compared with road speed rpm, dramatically increasing maintenance costs and shortening engine life.



Pony Pack Auxiliary Power Unit

OFFICE OF INDUSTRIAL TECHNOLOGIES
ENERGY EFFICIENCY AND RENEWABLE ENERGY • U.S. DEPARTMENT OF ENERGY

Technology Description

Rex Greer, President of Pony Pack, Inc., identified the need to cut down on wasteful and costly truck engine idling but was unable to find a cost-effective and efficient 12-volt auxiliary power unit on the market. With the help of a grant from the Inventions and Innovation Program in the U.S. Department of Energy's Office of Industrial Technologies, Pony Pack, Inc., designed and tested an auxiliary power unit called Pony Pack®, which maintains cab power while the main engine is not operating. The patented auxiliary power unit takes fuel from the truck's fuel tank.

The Pony Pack consists of a two-cylinder diesel engine, a 105-ampere direct-current alternator, a heat exchanger, and an air-conditioning compressor and condenser in a unit that mounts on 24 inches of frame rail space and weighs only 300 pounds installed. The unit also serves as a backup if the main engine alternator or air conditioning compressor fails. The Pony Pack's small size and energy-efficient operation consumes four times less diesel fuel than an idling truck engine performing the same functions.

Pony Pack produces its auxiliary power units in Albuquerque, New Mexico, and ships them to dealers and installers all over the United States. The installation manual is written so that any facility capable of working on heavy-duty trucks can install the unit in about 6 to 16 labor hours. The units are sold through truck dealers and manufacturers. In addition to being used in the long-haul trucking industry, the units can be used in other large engine applications, such as in military vehicles, industrial equipment, recreational vehicles, ambulances, buses, and locomotives.

Energy Savings and Pollution Prevention

The first commercial Pony Pack auxiliary power unit was introduced in 1988. More than 3000 units have been installed in the United States, cumulatively saving over 2.6 trillion Btu per year of diesel fuel. Since 1988, systems operating in the United States have saved about 17 trillion Btu and $86 million in diesel fuel purchases. The associated cumulative reduction in CO_2 emissions is over 1.4 million tons. Cumulative energy savings from the auxiliary power units are projected to grow by about 10% per year through 2010 to 58 trillion Btu.

Inventions and Innovation Program

The Inventions and Innovation Program provides financial assistance for establishing technical performance and conducting early development of innovative ideas and inventions. Ideas that have a significant energy-savings impact and future commercial market potential are chosen for financial support through a competitive solicitation process. Inventions funded by the program have saved enough energy to light 10 million homes per year. In addition, the program offers technical guidance and commercialization support to successful applicants. Ideas that benefit the Industries of the Future, designated by the Office of Industrial Technologies as the most energy-intensive industries in the United States, are especially encouraged.

"In 3.3 years, we had 10,056 run hours on the main engine, of which 971 hours were idling. During that time, Pony Pack avoided 5,517 hours of idling and consumed only 690 gallons. We've stretched oil changes from every 10,000 to every 15,000 miles, reducing the changes from 49 to 32 and saving $3,400. During service at 500,000 miles, we pulled a rod bearing and found no wear, saving $4,500 on repairs."

– Chuck and Kay Hersey
Owner-Operators (2000)

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